

Screening Evaluation of Dioxins Pollution Prevention Options



Kelly D. Moran, Ph.D.
TDC Environmental, LLC



Bay Area Dioxins Project

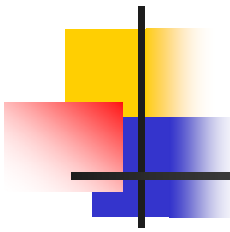
- Municipalities Team Up Through ABAG
- 2 EPA Grants
- Project Elements:
 - Pollution Prevention (P2) Options Screening
 - Public Outreach
 - Dioxins P2 Demonstration Projects



Numerous Dioxins Sources

- Incineration (medical, hazardous and solid waste)
- Burning (fireplaces, garbage)
- Unintentional fires (landfill and forest fires)
- Agricultural burning
- Paper bleaching
- Fuel combustion (diesel, gasoline, coal)
- Metal processing
- Cement kilns
- Drum reclamation
- PVC manufacturing
- Petroleum refining
- PCB releases
- Pentachlorophenol
- 2,4-D use
- Certain kaolin clays

Sources: U.S. EPA inventory and Dioxins 2000 Conference presentations.
Please note that this list is not comprehensive.



Municipalities Can Reduce Certain Dioxins Sources

- Pollution Prevention (P2)

- Purchasing
- Ordinances
- Community Education

*Focus of
Bay Area
Dioxins
Project*

- Dioxins Removal

- Emissions Control Equipment
- Clean Up Contamination

*Addressed by
regulatory
programs*



Selecting Dioxins P2 Options

- Which dioxins exposures are priorities?
 - Local sources differ from national sources
 - Local, national, and international benefits vary
- What else should municipalities consider?
 - Pros and cons (environmental & other)
 - Cost
 - Technical feasibility
 - Local implementation issues



Dioxins Source Data is Poor

- Many sources not well characterized
- Uncertain which sources are largest
- No data for most alternatives
- Not enough information to quantify the link between specific sources and specific human exposures

→ Not currently possible to do cost/benefit analysis for dioxins reductions



Screened 24 Dioxins P2 Options (11 Sources)

Source	P2 Options
<i>2,4-D</i>	Mechanical weed control; Other weed control pesticides
<i>Agricultural burning</i>	Non-burning alternatives
<i>Diesel Engines</i>	Natural Gas; Biodiesel; Oxydiesel; Diesel engine retrofits; Reduce trips/change modes
<i>Drum Reclamation</i>	Non-burning methods
<i>Medical Waste Incineration</i>	Non-incineration medical waste management methods; Reduce waste volumes; Eliminate PVC
<i>Paper Bleaching</i>	Process or totally chlorine free paper; Elemental chlorine free paper



Screened 24 Dioxins P2 Options (11 Sources)

Source	P2 Options
<i>Pentachlorophenol</i>	Non-wood alternative utility poles; Different wood preservatives
<i>Petroleum Refining</i>	Refining process modifications
<i>PCBs</i>	Remove from service
<i>Polyvinyl Chloride (PVC, "vinyl")</i>	Non-PVC alternatives
<i>Wood Burning</i>	Natural gas fireplaces; EPA-certified wood stoves; Air District model ordinance; "Better wood burning practices"; No burning



16 Screening Elements

- P2 Option Description
 - Entities involved
 - Prior related activities (Bay Area and elsewhere)
- Pros and Cons
 - Environmental and other benefits/detriments
 - Geographic location(s) affected
- Implementation Issues
 - Opportunities
 - Barriers
- Costs

***Details
are in the
Appendix***

Top Alternatives—Diesel

- Compressed natural gas (CNG)

Evaluation:

- *Many environmental benefits*
- *Reduced operating cost but high initial capital cost*
- *Not appropriate for long-haul routes*
- *Behavior change a challenge*



Photo: National Renewable Energy Laboratory

Top Alternatives—Wood Burning

- BAAQMD Model Ordinance
 - Limits new fireplaces
 - Prohibits trash burning
- Encourage Natural Gas Fireplaces

Evaluation:

- *Many environmental benefits*
- *Natural gas retrofits costly*
- *Main issues involve perceived values of fireplaces*



Top Alternatives—Medical Waste

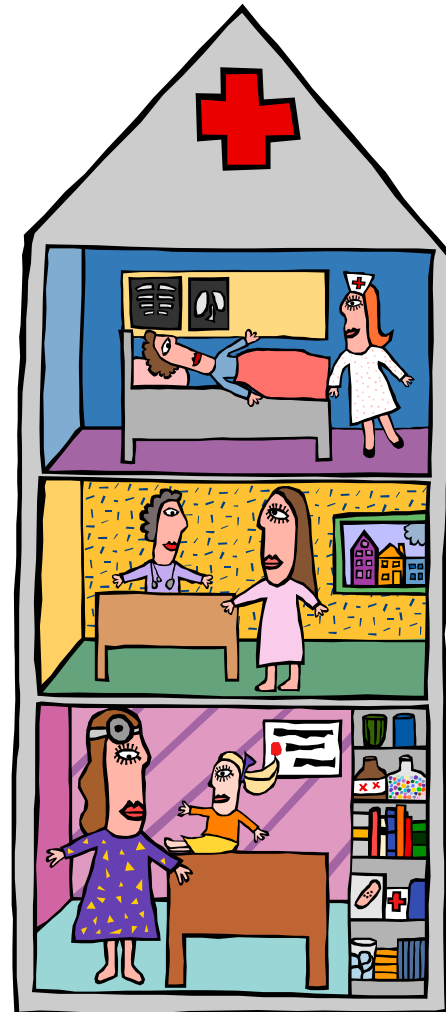
- Autoclave Medical Waste

Note: California law requires incineration of certain wastes (a small fraction of medical waste)

- Reduce Medical Waste Volume

Evaluation:

- *Excellent cost savings*
- *Issues of staff time and worker safety*
- *Many available resources (H2E, DHS)*





Municipalities Should Select Their Own Dioxins P2 Actions

- Resources are available
 - Screening Evaluation of Dioxins P2 Options
 - Bay Area Dioxins Project
 - Other Agencies (particularly U.S. EPA)
- Consider Local Issues
 - Community Priorities
 - Relationship to Permit Requirements (Water Quality)